

CLAIMS

I CLAIM:

1. A transgenic plant comprising in its genome an artificial genetic construct comprising a sense or antisense MinD protein coding sequence and a promoter which promotes expression of the MinD protein coding sequence in cells of the plant, wherein expression of the sequence in the plant cause alteration in the size, shape and/or number of plastids in plant cells of the plant as compared to non-transgenic plants of the species.
2. The plant of Claim 1, wherein the coding sequence is selected from the group consisting of an Arabidopsis MinD protein coding sequence and a Tagetes MinD protein coding sequence.
3. The plant of Claim 1, wherein the coding sequence is selected from the group consisting of SEQ ID NO:1 and SEQ ID NO:3.
4. The plant of Claim 1, wherein the construct comprises in 5' to 3' order a CaMV 35S promoter, a MinD protein coding sequence, and an OCS terminator.
5. The plant of Claim 4, wherein the coding sequence is selected from the group consisting of an Arabidopsis MinD protein coding sequence and a Tagetes MinD protein coding sequence.
6. The plant of Claim 4, wherein the coding sequence is selected from the group consisting of SEQ ID NO:1 and SEQ ID NO:3.
7. The plant of Claim 1, wherein the plastids are chloroplasts.
8. A DNA sequence comprising the sequence of SEQ ID NO:1.
9. A DNA sequence comprising the sequence of SEQ ID NO:3.

10. Seed of the plant of Claim 1.

11. A plant comprising in its genome a transgene comprising a sense or antisense MinD gene which causes the plant to have an altered number of plastids as compared to plants of the same species with the transgene.

5 12. Seeds of the plant of Claim 11.

13. A plant as claimed in Claim 11 wherein the coding sequence of the MinD gene is selected from the group consisting of AtMinD and TeMinD.

14. A plant seed comprising in its genome a genetic construct comprising a sense or antisense MinD protein coding sequence and a promoter, not natively associated with the MinD protein coding sequence, which promotes expression of the MinD protein coding sequence in the plant, wherein expression of the sequence in the plant cause alteration in the size, shape and/or number of plastids in plant cells of the plant as compared to nontransgenic plants of the species.

15. The plant of Claim 14, wherein the coding sequence is selected from the group consisting of an Arabidopsis MinD protein coding sequence and a Tagetes MinD protein coding sequence.

16. The plant of Claim 14, wherein the coding sequence is selected from the group consisting of SEQ ID NO:1 and SEQ ID NO:3.

17. The plant of Claim 14, wherein the construct comprises in 5' to 3' order a CaMV 35S promoter, a MinD protein coding sequence, and an OCS terminator.

18. The plant of Claim 17, wherein the coding sequence is selected from the group consisting of an Arabidopsis MinD protein coding sequence and a Tagetes MinD protein coding sequence.

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19. ~~The plant of Claim 17, wherein the coding sequence is selected from the group consisting of SEQ ID NO:1 and SEQ ID NO:3.~~

20. A genetic construct comprising a MinD protein coding sequence in either a sense or antisense orientation and a promoter that promotes expression of the sequence in plants, the promoter not being natively associated with the protein coding sequence.

21. The construct of Claim 20, wherein the MinD protein coding sequence is selected from the group consisting of an Arabidopsis MinD protein coding sequence and a Tagetes MinD protein coding sequence.

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10 22. ~~The construct of Claim 20, wherein the coding sequence is selected from the group consisting of SEQ ID NO:1 and SEQ ID NO:3.~~

23. The construct of Claim 20, wherein the promoter is a CaMV 35S promoter.

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24. A method for altering the size, shape and/or number of plastids in plant cells comprising the steps of constructing a genetic construct comprising a MinD protein coding sequence in either sense or antisense orientation and a promoter, not natively associated with the MinD protein coding sequence, which promotes expression of the MinD protein coding sequence in plants, introducing the genetic construct into a plant, selecting a plant that has received a copy of the genetic construct, and growing the plant under conditions that allow expression of the gene.

20 25. The method of Claim 24, wherein the coding sequence is selected from the group consisting of an Arabidopsis MinD protein coding sequence and a Tagetes MinD protein coding sequence.

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26. ~~The method of Claim 24, wherein the coding sequence is selected from the group consisting of SEQ ID NO:1 and SEQ ID NO:3.~~

Sub A
27. A DNA sequence isolated from its native genome comprising a plant MinD gene.

Sub B'2
28. The DNA sequence of Claim 27, wherein the DNA sequence is selected from the group consisting of SEQ ID NO:1 and SEQ ID NO:3.

Add B'3